



CANADA

DEPARTMENT OF RESOURCES AND DEVELOPMENT
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CANADIAN ARCTIC PLANTLIFE

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CANADIAN ARCTIC PLANTLIFE

Plantlife in the Canadian Arctic resembles, in a good many respects, that found in alpine regions in more southern latitudes. Several life-forms and a great many species are common to both the arctic zone and to mountain areas more than a thousand miles south. The principal physiographic difference is in the length of the day and the length of the growing season. But in high mountains, the accumulation of snow is often so great that the length of the effective growing season may closely approach that of the Arctic. Thus, above timber-line at Banff in the Canadian Rockies, in latitude 52 degrees North, the collecting season for botanists is approximately from July 1 to August 15. This period closely corresponds to that of the somewhat lower mountains west of the Mackenzie Delta, 16 degrees of latitude north of Banff, and, indeed, to the collecting season for most of the Canadian Arctic.

It is an adaptation to the short arctic summer that almost all truly arctic plants are perennial and develop the next year's flowering buds before the onset of winter. Summer is too short for annual species to complete a life cycle in one season. The failure of a single seed crop might exterminate the species in a local population. Most arctic plants require many years from germination to the first flowering. Many do not depend entirely on seed production for their propagation but are protected against unfavourable seasons by various means of vegetative reproduction.

In the Arctic there are no climbing plants, plants that sting or poison, nor any that are protected by spines or thorns. The implication, of course, is that such protection is not needed. Many are xerophytes;

that is, plants adapted to withstand prolonged drought by having rather small, leathery leaves, often covered by densely matted hairs that provide a felt-like covering for the stomata.

The arctic zone in North America comprises the Arctic Archipelago and, on the continent, all the treeless country lying north of the transcontinental coniferous forest. The southern boundary of the arctic zone thus coincides with the northern tree-line.

Plants in the Arctic do not grow haphazardly amongst each other. Those having similar requirements as to soil, moisture, and wind or snow protection generally grow together in more or less well-defined communities. Four such major plant communities may be recognized in the North American Arctic, each capable of subdivision into a number of more or less distinct associations, the relative importance of which again depends on the physiography of the landscape.

(1) Rock desert or fell-field communities:

- (a) Rock desert.
- (b) Unstable screes and stone creeps.
- (c) Gravelly river flats and fans.

(2) Tundra communities:

- (a) Dwarf-shrub heath.
- (b) Lichen and moss heath.
- (c) Grassland.
- (d) Willow and alder thickets.
- (e) Marsh and wet tundra.
- (f) Snowflashes.

(3) Strand communities:

- (a) Lagoon and salt marsh subject to floods.
- (b) Sand dunes and gravel beaches.
- (c) Rocky shores.

(4) Vegetation of fresh waters:

- (a) Ponds and lakes.
- (b) Brooks and rivers.

The most striking of these, perhaps, is the arctic rock desert which occupies vast areas of rock-strewn, barren flats that from the air look entirely devoid of vegetation but which, each summer for a short time, may be transformed into veritable arctic "rock gardens". The arctic tundra, which is best developed on the mainland, differs from the rock desert by having a closed or continuous plant cover; some tundra is rich in grass-like plants and lichens and provides excellent grazing for large herds of caribou and musk-oxen.

Few native arctic plants are of direct importance in the economy of man. None of the woody species are large enough for constructional use by the Eskimo, who, at least formerly, obtained what little wood he needed chiefly from driftwood. Heather and berry bushes, stunted willows, alder and ground birch are used by the Eskimo for cooking purposes; nearly all the larger lichens are highly inflammable when dry and may be used for cooking. Raw peat, particularly heath turf, but also partly decomposed sphagnum moss, is available nearly everywhere in the Arctic and is an important source of fuel.

Indirectly, the arctic vegetation is of great importance to man because it furnishes food for grazing animals. Seeds, winter buds and roots, and stems or leaves of many species are eaten by birds and small rodents that, in turn, constitute the food of some of the fur-bearing mammals. Likewise, the comparatively rich marine plantlife indirectly furnishes food for the sea mammals so important in the economy of the Eskimo.

The leaves, stems, roots, or berries of a small number of arctic plants are used for food by native and white inhabitants. Of greatest potential food value are the lichens, though none are used by natives. Several species of edible fleshy fungi (mushrooms) are found in the Arctic, but, like the lichens, are not eaten by natives. Among the Eskimos, the dependence on vegetable food varies from group to group, according to tradition and according to what plants are available; thus, to the most northerly tribes, the use of vegetable food is purely incidental and largely limited to the partly fermented and pre-digested content of the rumen of caribou and musk-oxen, whereas, in the diet of the Eskimo of Alaska, Labrador, and Greenland, vegetable food constitutes a regular, if not very large, item which, however, is important from a dietary point of view as a source of ascorbic acid and thiamin.

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